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VARIETIES OF *PITYROGRAMMA TRIANGULARIS*.

C. A. WEATHERBY.

EVER since the publication of Eaton's *Ferns of North America*, the "California gold and silver ferns" have been treated as a single species with one variety or as two species. This disposition, however, fails to account for all the forms which, as shown by later and much more ample collections than Eaton had before him, exist in this, within certain limits, highly variable group. Instead of two, there are four distinguishable extremes, occupying different ranges, but separated by characters either too slight in themselves or too little constant to warrant their segregation as species. They are, nevertheless, well worth recognition as geographic varieties.

Eaton's description still serves very well for the group as a whole: it may, however, be expanded and amended in some particulars. In addition to the narrow scales of the rootstock, the lower portion of the stipe often bears broader, thinner, pale brown, ovate-lanceolate, acuminate scales which may or may not have a narrow, blackish, sclerotic median band. The stipes vary from bright red-brown to blackish in color. In all varieties the pinnae vary considerably in shape and cutting. The large lower pinnae do not always have the basal segments on the lower side elongated; sometimes, even in well-developed fronds, they are no longer than the others. When greatly developed, they are usually narrowed toward the base. The basal segments of the upper side sometimes equal the others, sometimes are shorter. The lower basal segments of the second pair of pinnae are sometimes elongated like those of the first pair, sometimes

shorter than the others. In one variety, the spores are trilobate in outline; in all, they are vernicose-reticulate with low, flat-topped ridges.

The farinose indument of the lower surface of the lamina is secreted by minute glands, well described and figured by Blasdale, *Erythrea*, i. 253, pl. 2. When they occur on the leaf-surface, these glands are borne on short unicellular stalks, as figured by him: when, however, they grow along the veins, among the sporangia, the stalks lengthen, becoming two or three cells long and raising the secreting terminal cells above the sporangia. In addition, many specimens of *P. triangularis* bear on the under surface of the lamina long-stalked glands with shining, wine-colored, pyriform heads nearly twice as large as those of the indument-secreting glands. What their function may be is not apparent. When glands occur on the upper surface, they are similar in size and structure to the secreting glands of the lower surface. They produce either a somewhat farinose or an apparently gummy substance, but only in small quantities.

Occasionally, as noted by D. C. Eaton, *Contr. Nat. Herb.* iv. 227, the glands of the lower surface fail to function (perhaps, as he suggested, because of an excess of moisture or shade), producing little or none of the usual farinose indument. They then appear as distinct but numerous, yellow dots and these, seen against the green of the leaf-tissue, probably give the appearance which has led to such specimens being distributed as "bronze-powdered forms." A merely glandular appearance of the lower surface must, however, be taken with some caution in the case of old herbarium specimens which may have been poisoned with corrosive sublimate. The alcohol in this compound, if applied in sufficient quantity, entirely removes the soluble indument. A good example of its effect is seen in the National Herbarium specimen of Palmer's no. 856 in 1889 from Guadelupe Island, Lower California. In this plant, the under surface appears merely glandular except for the tips of the pinnae which escaped the corrosive sublimate bath or brush and are thickly covered with white indument. With a little practice, one learns to distinguish poisoned specimens by a certain drenched and matted appearance under a lens.

Maxon, *Contr. Nat. Herb.* xvii. 173 (1913), has shown that the correct generic name for the group here considered is *Pityrogramma* Link, *Handb. Gewachs.* iii. 19 (1833).

The descriptive key which follows will serve to indicate the distinguishing characters of the three varieties here recognized. They include nearly all the plants which have hitherto passed as white-powdered forms of *P. triangularis*. True *P. triangularis* with white indument appears to be rare, as one would expect in the case of an albino form. Except as noted under var. *viscosa*, the size and cutting of the lamina covers an essentially similar range of variation in all the varieties, though with more or less marked tendencies toward a certain type in each and a consequent difference of aspect much more easily seen than described.

I have had the privilege of examining in addition to the specimens in the Gray Herbarium, the material in the United States National Herbarium, the herbaria of Yale and Leland Stanford Universities and the Philadelphia Academy of Natural Sciences.¹ For this valuable opportunity I am indebted to the authorities of these institutions. I am also under special obligation to Rev. George L. Moxley for procuring for me living plants of var. *viscosa*, to Mr. Bayard Long for needed information on various matters and to Mr. William R. Maxon for encouragement and helpful criticism throughout. I take pleasure in dedicating one of the segregates here described as new to Mr. Maxon, as some small evidence, if it may pass as such, partly of personal gratitude for many courtesies received, but still more of the appreciation of his admirable work which all fern-students must feel.

- A. Upper surface of the usually coriaceous lamina *glabrous*; stipe usually bright red-brown and shining in young fronds, turning darker with age, essentially *glabrous*; indument bright to pale *yellow*, rarely white or lacking; basal segments of the lowest pinnae usually elongate and pinnatifid; spores round to deltoid in outline. 1. *P. triangularis*
- A. Upper surface of the lamina *glandular* or *viscid* or both; indument *white*, rarely pale yellow or lacking
 - B. Upper surface of the usually coriaceous lamina *viscid*, often also with yellowish, stalked, resinous glands; stipe red-brown, essentially *glabrous*; lower basal segments of the lowest pinnae usually only undulate-crenate, not pinnatifid; spores round to deltoid in outline; plant of southwestern California. var. *viscosa*
 - B. Upper surface of the often rather thin lamina *glandular* only, not *viscid*; lower basal segments of the lowest pinnae usually elongate, dilated and deeply pinnatifid.
 - C. Stipes mostly *blackish* and *glandular* and *white-farinose* above and near the base, not very lustrous; lamina thin and soft, usually

¹Indicated in the citation of specimens by the following symbols: Gray Herb., G; U. S. National Herb., N; Herb. Phil Acad., P; Herb. Stanford Univ., S; Herb. Yale Univ., Y.

thickly beset above with whitish glands, giving it a gray appearance; spores *round to deltoid* in outline; plant of the mountain regions of central California. var. *pallida*

- C. Stipes mostly *red-brown* and essentially *glabrous*; lamina subcoriaceous, beset above with usually rather sparse yellowish glands; spores *trilobate* in outline; plant chiefly of Arizona, southeastern California and adjacent portions of Mexico var. *Maxoni*

PITYROGRAMMA TRIANGULARIS (Kaulf.) Maxon Contr. Nat. Herb. xvii. 173 (1913). *Gymnogramma triangulare* Kaulf. Enum. Fil. 73 (1824); Brack. U. S. Expl. Exp. xvi. Bot. Fil. 23 (1854). *Gymnogramme triangularis* Hook. & Grev. Ic. Fil. ii. t. 153 (1831); Hook. Fil. Exot. t. 10 (1859); Hook. Sp. Fil. v. 146 (1864); Hook. & Bak. Syn. Fil. 384 (1868); D. C. Eaton, Ferns of the Southwest 304 (1878), Ferns of N. Am. ii. 15 t. 48, figs. 1-5 (1879) and in Watson Bot. Calif. ii. 335 (1880); Meehan, Fl. and Ferns of the U. S., ser. 2, i. 177, t. 44 (1880). *Gymnogramma triangularis* Hook. & Arn. Bot. Beechey Voy. 161 (1833); Hook. Fl. Bor. Am. ii. 259 (1840); Torrey, Pac. R. R. Rep. iv. 160 (1856). *Gymnogramme oregana* Nutt. in D. C. Eaton, Ferns of the Southwest 305 (1878) and Ferns of N. Am. ii. 16 (1879), as syn. *Gymnopteris triangularis* Underw. Our Nat. Fern ed. 6, 84 (1900). *Ceropteris triangularis* Underw. Bull. Torr. Bot. Club xxix. 630 (1902); Christensen, Ind. Fil. 170 (1905).

In the case of a plant so well known as is the typical form of *P. triangularis*, it seems hardly worth while to cite the very numerous specimens examined. As to range, specimens have been seen from Clark Co., Nevada; San Diego, Riverside, San Bernardino, Los Angeles, Santa Barbara, Kern, San Luis Obispo, Inyo, Monterey, Santa Cruz, Santa Clara, Mariposa, Alameda, Tuolumne, Calaveras, Amador, Marin, Sonoma, Yuba, Butte, Mendocino, Plumas, Tehama and Humboldt Counties, California; Coos, Douglas, Lane, Linn, Marion and Multnomah Counties, Oregon; Klickitat, Pierce, Clallam and Island Counties, Washington; Vancouver Island, B. C.: and the northern part of Lower California. In specimens from Spring Valley, San Diego Co., Cal., (Feb.-May, 1900, *Laura F. Kimball*, N) and from Panamint Mts., Inyo Co., Cal. (*Coville & Funston*, 610, N) the lamina is merely glandular beneath with no evidence of poisoning. *Leiberg* 3508 from near Sinartville, Yuba Co. (N), and part of the material under Mrs. R. M. Austin's no. 977 from Quincy, Plumas Co. (N) represent white-powdered forms.

All but one of the specimens seen from north of California, most of those from the northern and more inland portions and some from the southern part of that state, have the red glands mentioned above.

Those from the coastal region from Sonoma County south to Santa Barbara County, on the contrary, show no trace of these glands and average somewhat larger in size. This difference, however, correlates with no other character and seems to call for no taxonomic recognition. Chamisso's type collection of *P. triangularis* was made at San Francisco Bay and doubtless belongs to the glandless form. The original material of *Gymnogramme oregana* Nutt., preserved at the Philadelphia Academy, consists of two plants, one well-developed, with stout stipes 2-5 dm. long, the other small, with slender stipes 1-2 dm. long, and of two detached fronds. In all, the fronds are very young, the lamina hardly fully expanded, and have a whitish indument. They show the red glands which seem to be characteristic of the northern material of *P. triangularis*. Nuttall himself has, on his label, crossed out the name *oregana* and written in *triangularis* with a reference to Hooker and Greville's plate of that species.

Var. **viscosa** (Nutt. ex. D. C. Eaton), n. comb. *Gymnogramme triangularis*, var. *viscosa* D. C. Eaton, Ferns of N. Am. ii. 16 (1879) and in Watson Bot. Cal. ii 335 (1880). *Gymnogramme viscosa* Nutt. in D. C. Eaton, Ferns of the Southwest 305, (1878) as syn. and Ferns of N. Am. I. c. *Gymnogramme pyramidalis* Nutt. in D. C. Eaton, I. c., as syn. *Ceropteris viscosa* Underw. Bull. Torr. Bot. Club xxix. 631 (1902); Christensen, Ind. Fil. 170 (1905). *Pityrogramma viscosa* Maxon, Contr. Nat. Herb. xvii. 173 (1913).

CALIFORNIA. SAN DIEGO COUNTY: Mission Hills, May 5, 1903, *LeRoy Abrams*, 3396 (G, S: glandular above; basal segments pinnatifid); shady ledges, Howard Cañon, La Jolla, Apr. 14, 1914, *F. E. & E. S. Clements*, 2 (G: indument yellowish); Rancho de la Nacion, *Kimball* (G); sides of ravines, Del Mar, March, 1894, *Canby* (G: glandular above; mixed with *P. triangularis*); dry hillsides, Linda Vista, July 6, 1915, *Macbride & Payson*, 788 (G); Jamul Valley, 1875, *Palmer*, 433 (G: glandular above); Eucalyptus Cañon, *hb. M. Rodman* (G); moist ravine, 15 miles north of San Diego, March 7, 1862, *J. G. Cooper*, 439 (N: glandular above); Otay Mesa, May 14, 1915, *Collins & Kempton*, 79 (N); San Miguel Mts., Feb.-May, 1900, *Kimball* (N: glandular above); San Diego, March 14, 1882, *M. E. Jones*, 3067 (N); Apr., 1875, *hb. G. C. Woolson* (Y); *D. Cleveland* (Y); Pala, June 1880, *Parish* (Y); Evendigo, Apr. 11, 1914, *Parish*, 9092 (S); Coast Mts., June, 1897, *Parish* (S: mixed with *P. triangularis*); Old Mission Dam, alt. 350 ft., Apr. 10, 1904, *H. P. Chandler*, 5055 (S: glandular above); San Diego, *Nuttall* (P: types of *Gymnogramme viscosa* and *G. pyramidalis*). RIVERSIDE COUNTY: Pigeon Pass Road, near summit of Box Springs Mt., alt. 1800 ft., Feb. 27, 1910, *Reed*, 2947 (N). LOS ANGELES COUNTY: Santa

Catalina Isl., "common in canons" Avalon, June 2, 1895, *Trask* (N); dry hillsides, March 29, 1900, *Grant*, 122 (S); Apr. 21-24, 1904 (S); 1885, *W. S. Lyon* (G).

Nuttall's material of *Gymnogramme viscosa* in the Herbarium of the Philadelphia Academy consists of two small detached fronds about 5 cm. long, with the characteristic habit of extreme var. *viscosa* and without glands on the viscid upper surface of the lamina. The specimen of *G. pyramidalis* is a single large frond, 10 cm. long, again with the characteristic *viscosa* habit and with stalked glands plainly apparent on what little of the upper surface shows. Underwood's statement, l. c. 630, that one of Nuttall's Oregon specimens was labelled by him "*viscosa" indicates an error somewhere. Var. *viscosa* is a very local plant, known only from southwestern California.

Var. *viscosa* varies considerably in leaf-form. The extreme and most characteristic form figured by Eaton has rather distant pinnae and comparatively few, likewise distant, segments. But both pinnae and segments may be as close and the latter as numerous as in the typical form of the species, thus constituting a transition to it, so far as these characters are concerned. The most remarkable variation in this direction is found in specimens collected at San Diego by D. Cleveland (Y) and at San Miguel Mt., near National City by Miss Laura F. Kimball in 1900 (N). These have very large fronds (14 cm. long) with viscid upper surface and white indument, but tripinnatifid, with numerous segments and the lower basal pinnae very large and deeply pinnatifid. Their appearance is altogether that of luxuriant states of typical *P. triangularis*. Specimens collected by Blanche Trask at Avalon, Santa Catalina Island (N) have the characteristic habit of var. *viscosa*, but the upper surface of the lamina glabrous, and in this respect are transitional to the typical form. The fronds in these specimens are young; but in all other specimens of var. *viscosa* seen, the fronds even when very young are strongly viscid. Collins & Kempton 88 from the Otay Mesa, San Diego, May 14, 1915 (N) has the thick frond and general habit of var. *viscosa*, but the upper surface of the lamina is densely glandular and not at all viscid and the spores are somewhat trilobate. In these respects, it is transitional to var. *Maxoni*. In some specimens, every distinctive character of var. *viscosa* breaks down in

the direction of one or another of the other varieties; Underwood's raising of it to specific rank seems not to have been justified.

Var. **pallida**, n. var. Stipitibus nigrescentibus superne basinque versus plerumque minute glandulosis et albo-farinosis; laminis tenuibus, supra propter glandulas albidas opacas subfarinosas plerumque numerosas pallidis, subtus albo-farinosis; pinnarum infimarum segmentis vel pinnulis basiscopis elongatis dilatatis profunde pinnatifidis; sporis circumscriptione rotundis vel deltoideis angulis obtusissimis.

CALIFORNIA: SANTA CLARA COUNTY: *Mrs. Bush* (G). TULARE COUNTY: Kaneah, Apr. 28, 1895, *Eastwood* (G). MADERA COUNTY: Hills about three miles above Pollasky, Apr. 11, 1906, *Heller*, 8141 (TYPE in Hb. Gray; also N, S). AMADOR COUNTY: White Bar, alt. 1000 ft., May 13, 1896, *Hansen*, 1637 (N). EL DORADO COUNTY: rocky bluffs along Camp Creek. 8 miles north of Grizzly Flats, June 1, 1902, *W. G. Watkins*, 16 (N). BUTTE COUNTY: Iron Cañon, 1870, May, 1883, May, 1896, 197, May, 1897, *Mrs. Austin* (all N). WITHOUT DEFINITE LOCALITY: 1879, *Miss E. D. Pelton* (Y).

Heller's comment on the type collection describes very well the obvious external characters of this variety which he supposed to be *viscosa*. "When fresh," he says, "the upper side of the frond is much paler than is that of the other species [*triangularis*] and the whole plant less stiff." The specimen of the type number in the Herbarium of the Philadelphia Academy has the stipe more nearly glabrous than usual and the white indument scanty or lacking.

So far as the material at hand shows, var. *pallida* holds its characters better than any of the other varieties. These characters, however, are rather slight and comparative, and in the region where both occur, *P. triangularis* exhibits some tendency to develop white-powdered forms which suggest a transition to var. *pallida*. Everything considered, I am unable to regard the latter as more than a well-marked variety.

Var. **Maxoni**, n. var. Stipitibus rubro-brunneis nitidis glabris, laminis subcoriaceis vel tenuibus supra plerumque sparse glandulosis, glandulis flavescentibus juventute nitidis aetate opacis; pinnarum infimarum segmentis vel pinnulis basiscopis plerumque elongatis et profunde pinnatifidis; sporis circumscriptione trilobatis, lobis rotundatis.

ARIZONA: Santa Catalina Mts., Apr. 23, 1881, *Pringle* (G); shaded pass, rocky cañons of the Santa Catalina Mts., May 23, 1881, *Pringle* (N); under rock shelf near falling water, head of Rincon Valley, Rincon Mts., alt. 3500 ft., July 27, 1909, *J. C. Blumer*, 3271

(TYPE in Nat. Herb.; G, S.); Salt River, 16 miles north of McMillinville, alt. 2800 ft., May 24, 1916, *E. A. Goldman*, 2672 (N).

CALIFORNIA. SAN DIEGO COUNTY: Jacumba Hot Springs, May 23, 1894, *E. A. Mearns* (International Boundary Commission, 3320 (N); desert slopes of San Jacinto Mts., Apr., 1882, *Parish*, 501a. RIVERSIDE COUNTY: Whitewater, Feb., 1881, *Vasey* (N); under rocks in Palm Cañon, May 19, 1917, *Reed*, 3871 in pt. (N). SAN BERNARDINO COUNTY: Mentone, 1904, *R. J. Smith*, 25 (G); Palm Springs, Apr. 30, 1913, *Eastwood*, 3018 (N); Andreas and Murray Cañons, Palm Springs, Aug. 23, 1906, *T. H. Kearney* (N). SANTA CLARA COUNTY: Coast Range, Dec. 28, 1878, *L. G. Yates* (S: mixed with *P. triangularis* and possibly not actually from this locality). WITHOUT DEFINITE LOCALITY: 1876, *Parry & Lemmon*, 431 (G); desert district between California and Arizona, 1876, *Parry* (G).

LOWER CALIFORNIA: Sierra de Laguna, Jan. 23, 1897, *Brandegge* (N); Cedros Isl., *Brandegge* (N).

SONORA: damp cool shade, Huchuerachi, Dec. 12, 1890, *F. E. Lloyd*, *Lumholtz Exp.*, 484 (G).

The large suite of specimens in the National Herbarium shows every gradation from the round spores of typical *P. triangularis*, through blunt-angled deltoid shapes, to the strongly trilobate spores of var. *Maxoni*. Palmer's no. 856 in 1889 from Guadalupe Island, Lower California (N), and his no. 101 in 1875 from the same place (G, Y) have the glabrous upper surface and general habit of typical *P. triangularis*, but white indument and some of the spores more or less trilobate. Specimens collected at Nine Mile Cañon, Ariz., by J. H. Ferriss (P) have the habit, in different fronds, of both var. *Maxoni* and the typical form, the glandular surface of the former and the yellow indument and round spores of the latter. No. 1589 of the Mexican Boundary Commission (Emory Expedition; N) has a glandular upper surface and round spores. R. H. Alderson's no. 754 from Witch Creek, San Diego Co., California, has the frond finely cut and the upper surface slightly glandular but yellow indument. All of them are in one way or another transitional to the typical form. It may be added that transitional specimens usually do not show exceptional vegetative vigor (the Cleveland and Kimball collections mentioned above are exceptions; more often just the contrary is the case), shrivelled spores or any other of the usual indications of hybridity.

GRAY HERBARIUM.

PYROLA ROTUNDIFOLIA AND *P. AMERICANA*.

M. L. FERNALD

WHEN, in 1904, I pointed out¹ the distinctions between the northern Eurasian *Pyrola rotundifolia* L. and the Alleghenian *P. americana* Sweet, no material was available which clearly broke down the distinctions between the two, and this fact was reinforced by the isolation of the two plants and the decidedly southern and dry habitat of *P. americana*, contrasted with the northerly and more varied habitat of *P. rotundifolia*.

In 1904 a single collection was at hand which somewhat bridged the gap between the two plants. This material, from a sphagnum swamp at Manuel's, Newfoundland (*Robinson & Schrenk*), smaller in all details than the continental *P. americana*, was at that time supposed to be referable to *P. asarifolia* Michx., var. *incarnata* (Fisher) Fernald. Subsequent experience in Newfoundland, however, has shown that the plant of the Manuel's sphagnum swamp is generally distributed throughout the central and southeastern acid region of the island and that in every character it exactly connects Eurasian *P. rotundifolia* and Atlantic American *P. americana*. The Newfoundland plants have been studied with the greatest care at different intervals during a period of several years, always with the same result, namely: the Newfoundland plant seems inseparable from Eurasian material of *P. rotundifolia*, var. *arenaria* Mert. & Koch and this differs in no morphological character from the continental and more southern *P. americana*. The only differences are those of size, var. *americana* running larger in all its parts. The latter plant throughout most of its range, from Nova Scotia, Prince Edward Island, western Bonaventure and Rimouski Cos., Quebec to Frontenac Co., Ontario, South Dakota and Georgia, inhabits dry or sandy woods, but northward, at the northeastern limits of its range, for example, on the upper St. Francis in Maine, at Bic, in Rimouski Co., Quebec, and at Nouvelle in Bonaventure Co., Quebec, var. *americana* is found only in wet, mossy, spruce woods or at the borders of sphagnum bogs. In this interchange of habitats *P. rotundifolia*, var. *americana* falls into the same class of oxylophytes as *Cypripedium acaule* Ait., *Epigaea*

¹RHODORA, VI. 201 (1904).

repens L., *Gaultheria procumbens* L. and *Gaylussacia dumosa* (Andr.) T. & G. (as var. *Bigeloviana* Fernald), which southward are characteristic of dry silicious habitats (pine or oak barrens and dry woods, etc.) but which northward, especially in the dominantly calcareous areas bordering the Gulf of St. Lawrence, are apparently able to exist, at least are found only in the acid bogs and black spruce swamps.

In Newfoundland, *P. rotundifolia*, var. *arenaria* likewise has interchangeable habitats, sometimes occurring in open sandy or gravelly thickets or on pond-shores, but oftenest in wet sphagnum bogs or spruce swamps. In the latter habitat the branches of the subterranean stems become greatly elongated and their coriaceous, brown, oblong, blunt or mucronate bracts consequently remote; in the drier habitats the caudex is short and the bracts more crowded as in most European specimens. Var. *arenaria*, although not definitely known from the American continent, is the representative of the species in Greenland; and, now well known from Newfoundland, it is to be sought on the Labrador Peninsula and elsewhere in our northern regions.

The two American varieties of *P. rotundifolia* may be distinguished as follows:

P. ROTUNDIFOLIA L., var. *ARENARIA* Mert. & Koch in Roehling, Fl. Deutschl. iii. 103 (1831); Koch, Syn. 478 (1838); Lange, Consp. Fl. Groenl. 84 (1880); Andres, Oesterr. Bot. Zeitschr. lxiv. 239 (1914). *P. intermedia* Schleich. Cat. Pl. Helv. ed. 3, 23 (1815). *P. maritima* Kenyon, Phytol. ii. 727 (1847). *Thelaia intermedia* (Schleich.) Alef., Linnaea, xxviii. 65 (1856).—Leaf-blades 1.8–5 cm. long, 1.5–4 cm. broad: racemes 3–13-flowered, in anthesis 2–9 cm. long: lower bracts 1–2 mm. broad: calyx 5–7 mm. broad, its firm lance-oblong to oblong-obovate lobes 1.6–3 mm. long: petals 5–7 mm. long, 4–6 mm. broad: anthers 2–2.7 mm. long.—Northern and middle Europe and Asia; Greenland and Newfoundland. The following NEWFOUNDLAND specimens belong here: sphagnum swamp, Manuel's, August 8, 1894, *Robinson & Schrenk*; cool thicket, Western Bay, Conception Bay, August 21, 1914, *G. S. Torrey*, no. 94; boggy places on hill southwest of Tilt Cove, August 21, 1911, *Fernald, Wiegand & Darlington*, no. 6001; open bogs among the hills, Grand Falls, July 26, 1911, *Fernald, Wiegand, Bartram & Darlington*, no. 6000; wet boggy woods, Millerton Junction, *Fernald, Wiegand & Darlington*, no. 5998; gravelly beach, Middle Birchy Pond, July 11, 1910, *Fernald & Wiegand*, no. 3812.

Var. **americana** (Sweet), n. comb. *P. americana* Sweet, Hort. Brit. ed. 2, 341 (1830); Fernald, RHODORA, vi. 201 (1904); Andres,

Oesterr. Bot. Zeitschr. lxiv. 243 (1914), in part.—Leaf-blades 2.5–8 cm. long, 2–7 cm. broad: raceme 5–21-flowered, in anthesis 0.25–2 dm. long: lower bracts 2–4 mm. broad: calyx 6.3–10 mm. broad; its firm oblong to rhombic lobes 2.5–4.3 mm. long: petals 6.5–10.5 mm. long, 3.5–8 mm. broad: anthers 2.7–3.6 mm. long.—Chiefly in dry woods or clearings, or northward in bogs and swamps, Nova Scotia, Prince Edward Island and western Bonaventure County, Quebec to Frontenac Co., Ontario, Minnesota, South Dakota, and Georgia.¹

GRAY HERBARIUM.

REPORTS OF THE FLORA OF THE BOSTON DISTRICT,—XXXIII.

CISTACEAE.

HELIANTHEMUM.

H. Bicknellii Fernald (*H. majus* BSP.; see RHODORA xxi. 36, 1919). Dry soil, common, especially southward.

H. canadense (L.) Michx. Dry rocky and sandy soil, very common throughout.

HUDSONIA.

H. ericoides L. Cohasset Narrows (*W. G. Farlow*, August, 1877). Specimen in Herb. Gray.

¹ Andres gives a much broader range and cites specimens from Montana, Colorado, Utah and Idaho. These plants are certainly not var. *americana*. In his articles on *Pyrola* (as *Pirola*) Andres has frequently misinterpreted American plants and American literature. Thus, for example, he makes an amazing interpretation of a note by the present writer. In discussing the absence from Newfoundland of many common Canadian species the writer said: "But the distance across Cabot Strait, the shortest route from the southwestern mainland to Newfoundland is fully 70 miles, and, although this does not seem a forbidding gap, the fact remains that very many common Canadian species with fine spores or with the seeds plumose, feathery or otherwise adapted for wind-transportation have failed to cross from Cape Breton to southwestern Newfoundland. Among such species . . . are *Lycopodium sabinaefolium*, *Adiantum pedatum*, *Dryopteris marginalis*, *Pyrola elliptica* and *Chimaphila umbellata*," etc. But Andres's Germanic mind has interpreted this list as an indication of the plant association to which *Pyrola elliptica* belongs; in his monographic studies of the genus saying under *P. elliptica* "Begleitpflanzen siehe Fernald. Expeditions [Expedition] to New-Foundland [Newfoundland]. RHODORA XLIII. (1911) 147: *Lycopodium sabinaefolium*, *Adiantum petatum* [pedatum], *Dryopteris* [*Dryopteris*] *marginalis*, *Chimophila* [*Chimaphila*] *umbellata*." (Andres, Allgem. Bot. Zeitschr. xx. 117. 1914).

H. tomentosa Nutt. Sandy seashore and sand dunes from Amesbury to Duxbury.

LECHEA.

L. intermedia Leggett. Dry sandy and rocky soil, common.

L. Leggettii Britton & Hollick. Norwood, border of Purgatory Swamp (*K. M. Wiegand*, July 23, 1909).

L. maritima Leggett. Dry sand, very common along the coast, but frequent inland.

L. maritima Leggett, var. **interior** Robinson. Sandy soil at Andover, Tewsbury, Watertown, Sudbury, Dedham and Hingham.

L. minor L. Dry gravelly roadside, Eliot St., near Morseville, Natick (*K. M. Wiegand*, Sept. 28, 1911); Sherborn (*Miss M. L. Loomis*, July 31, 1913); Hingham (*C. E. Faxon*, August 16, 1885; *T. T. Bouvé*, August, 1884).

L. tenuifolia Michx. Dry sterile soil, common throughout.

L. villosa Ell. Dry fields and woods, very common throughout.

VIOLACEAE.

VIOLA.

V. adunca J. E. Sm. (*V. arenaria* of Am. auth., not DC.; see RHODORA xv. 108, 1913). Wellesley Hills (*Miss F. C. Prince*, May 4, 1896). This specimen is in herb. Boston Soc. Nat. Hist. It is far out of range, the nearest station being in Northern Worcester Co. near Fitchburg.

V. affinis Le Conte. Low woods, bank of Charles River, Wellesley (*K. M. Wiegand*, May 15, Aug. 26, 1909; *C. F. Batchelder*, May 7, 1910).

V. ARVENSIS Murr. Medford St., Somerville (*C. E. Perkins*, no date, see RHODORA v. 156, 1903); Arlington (*Miss Mary N. Plummer*, no date); old field, Cambridge (*M. L. Fernald*, May 25, 1891); Dr. Geo. G. Kennedy's land, Milton (*E. F. Williams*, May 12, 1901).

V. blanda Willd. Rare, in moist rich woods; Merrimac, Gloucester, Andover, Braintree, Hyde Park, Newton, Lexington.

V. Brittoniana Pollard. River meadows along the Concord and Charles Rivers, also at Georgetown, Brookline, Stony Brook Reservation, Medfield and Mansfield.

V. CHINENSIS G. Don. (see RHODORA x. 39, 1908). Weed in Botanic Garden, Cambridge (*M. L. Fernald*, May 21, 1906, May 17, 1907; *W. Deane*, May 3, 1913). Native of eastern Asia.

V. conspersa Reichenb. Moist fields and open woods, common. White-flowered form at Acton and Concord (*A. W. Hosmer* in RHODORA i. 223, 1899).

V. cucullata Ait. Swamps, very common throughout. White-flowered form collected at Purgatory Swamp, Norwood (*N. T. Kitteridge*, June 4, 1885).

V. eriocarpa Schwein. (*V. scabriuscula* Schwein.; see Bull. Torr. Bot. Club xxxviii. 194, 1911). Damp soil, often in woods, occasional.

V. fimbriatula J. E. Sm. Sandy places, very common throughout.

V. incognita Brainerd, var. **Forbesii** Brainerd. Damp woods at Salisbury, Boxboro, Arlington, N. Cambridge, Brookline and Weston.

V. lanceolata L. Swamps, meadows and wet shores, common throughout.

V. ODORATA L. Garden escape; reported from eight scattered stations.

V. pallens (Banks) Brainerd. Wet woods and swamps, common throughout. White-flowered form without lines at Franklin (*L. R. Perkins* in RHODORA xi. 164, 1909).

V. palmata L. One plant only, on shore of Concord River, Carlisle, with the abundant *V. Brittoniana* (*M. L. Fernald*, May 21, 1911). This is the only specimen of the species known from this region, and is entered on the authority of a determination by Dr. E. Brainerd.

V. papilionacea Pursh. Rich low ground, mainly about dwellings, common.

V. pectinata Bicknell. Meadows near Charles River in Needham and Dedham.

V. pedata L., var. **lineariloba** DC. Dry sand and gravel, common throughout. A form with rose-colored petals (*V. pedata*, f. *rosea* A. L. Sanders, RHODORA xiii. 172, 1911) has been found at Wayland (*Miss A. L. Sanders*); and also (see RHODORA xiv. 22, 1912) at Framingham (*A. J. Eames*) where noticed to be inconstant in color. A white-petaled form (*V. pedata*, f. *alba* (Thurb.) Britton, see RHODORA, xiii. 172, 1911) has been observed to persist at Wayland (*Miss A. L. Sanders*). A form with leaves digitately lobed was collected

in bloom at Prospect Hill, Waltham, by *H. A. Purdie*, Oct. 17, 1907 (specimen in herb. W. Deane) and at Carlisle, by *M. L. Fernald*, May 21, 1911 (specimen in Herb. Gray).

V. primulifolia L. Swampy ground, common throughout.

V. pubescens Ait. Rich woods, occasional.

V. rotundifolia Michx. Rich woods, occasional in Essex Co., also reported from Framingham, S. Braintree and Holbrook.

V. sagittata Ait. Fields, occasional from Blue Hills northward.

V. septentrionalis Greene. Fields and open woods; frequent north of Boston; only reported southward from Franklin.

V. sororia Willd. Moist fields and woods; occasional, except in southeastern towns.

V. TRICOLOR L. Gardens and fields, spontaneous and spreading, occasional.

V. triloba Schwein. Rich dry woods, rare. Fifteen stations from Norwood northward.

[*V. CORNUTA* L. was reported from a garden in Lexington by Miss M. P. Cook in RHODORA i. 81, 1899, but no specimens are available. This was also one of Minot Pratt's introductions at Concord, along with *V. rostrata*, *V. striata*, and *V. canadensis*, but these have all been extinct in this region for many years, see RHODORA i. 171, 1899. There is in herb. Boston Soc. Nat. Hist. a specimen of *V. canadensis* collected in 1822 by Dr. F. Boott, and marked "Boston, U. S. A." It is hardly likely that this could have been collected wild in our area and some clerical error is suspected.]

HYBRIDS.

These reports are all based on actual specimens. Those reported by Mr. Forbes were transplanted to his garden in Brookline, and are growing there.

C. Brittoniana Pollard \times **fimbriatula** J. E. Sm. Near Fresh Pond, Cambridge (*A. Gray*, 1843); Needham (*C. E. Faxon*, May 1877, *W. Deane*, June 7, 1884).

C. Brittoniana Pollard \times **lanceolata** L. Needham, Charles River meadows, only one plant found (*F. F. Forbes*, see RHODORA xi. 14, 1909).

V. Brittoniana Pollard \times **pectinata** Bicknell. Charles River meadows, Needham and Dedham (*F. F. Forbes*, June, Aug., Sept.,

1906); Needham (*C. E. Faxon*, May, 1877, *W. Deane*, June 7, 1884); Sherborn (*H. A. Purdie*, Sept. 11, 1898, *E. F. Williams*, *J. M. Greenman*, Sept. 18, 1898).

V. Brittoniana Pollard × **sagittata** Ait. Needham (*W. Deane*, June 2, 1888).

V. cucullata Ait. × **fimbriatula** J. E. Sm. Hamilton, Arlington, Concord, Brookline and Milton.

V. cucullata Ait. × **papilionacea** Pursh. Dedham (*M. L. Fernald*, June 4, 1899).

V. cucullata Ait. × **septentrionalis** Greene. Arlington Heights (*M. L. Fernald*, May 12, 1905); Framingham (*F. F. Forbes*, May 19, Aug. 18, 1907; July 28, 1906).

V. cucullata Ait. × **sororia** Willd. Arlington (*F. F. Forbes*, May 24, Aug. 7, 1908).

V. cucullata Ait. × **triloba** Schwein. Granny Hill, Lexington (*J. M. Greenman*, — , 1905). See RHODORA vii. 56, 1906; xv. 115, 1913.

V. fimbriatula J. E. Sm. × **papilionacea** Pursh. Brookline (*F. F. Forbes*, May 19, July 7, 1907).

V. fimbriatula J. E. Sm. × **sagittata** Ait. Carlisle (*C. H. Knowlton*, Sept. 6, 1902); Lincoln (*C. H. Knowlton*, May 17, 1908); Arlington (*M. L. Fernald*, June 5, 1904).

V. fimbriatula J. E. Sm. × **septentrionalis** Greene. Amesbury, dry bank, Tyngsboro (*C. H. Knowlton*, May 30, 1901), Lincoln, Lexington, Arlington, Newton, Brookline.

V. fimbriatula J. E. Sm. × **sororia** Willd. Arlington (*F. F. Forbes*, May 22, July 28, 1907); dry field, Sharon, (*C. H. Knowlton*, May, 1907).

V. fimbriatula J. E. Sm. × **triloba** Schwein. Crevices in rocks in open woods with parents, Granny Hill, Lexington (*B. L. Robinson* & *J. M. Greenman*, Sept. 20, 1903; see RHODORA xv. 114, 1913).

V. septentrionalis Greene × **sororia** Willd. Arlington (*F. F. Forbes*, June 21, 1908).

C. H. KNOWLTON	} Committee on
WALTER DEANE	

STACHYS LANATA IN ONTARIO.—There were received recently for identification at the U. S. National Museum specimens of an unfamiliar labiate plant of striking appearance collected near Owen Sound, Ontario, by Mr. W. R. McColl. It proved to be *Stachys lanata* Jacq., a native of the Caucasus region, which has perhaps not been reported previously from North America, although no thorough search of literature has been made for verification of this point. A somewhat similar species, *Stachys germanica* L., has been found on ballast in the eastern United States.

In general features *Stachys lanata* is quite unlike our native species of the genus, and when growing it must be very conspicuous. It is a rather tall, coarse perennial with large leaves and dense flower spikes, and all parts are closely covered with long, white, matted hairs. Mr. McColl has kindly communicated the following information, which seems to indicate that the species has become well established: "Until this fall I never saw the plant except for a small clump growing on a grassy roadside in Sydenham Township, Gray County, Ontario. This fall, however, I came across a patch of it perhaps 400 yards long by 100 yards wide, on a grassy, sloping hillside facing the east, west of which is limestone rock about 30 feet high, with plenty of talus in front. The plants grow from the talus down the slope, and appear to prefer dry situations. Rev. Dr. Campbell of Montreal has combed western Ontario rather carefully and did not find the plant, but Mr. Newton Tripp of Forest, Ontario, found a specimen a year ago and sent it to the Guelph Agricultural College, where they named it 'sheep's lug.' Apparently the plant is rare. Outside of the big lot found this fall, I know of no other station for it. Mr. Maynard, upon whose farm the plants grow, says that while they spread rapidly from seed, they are easily killed by ploughing under once."—PAUL C. STANDLEY.¹

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